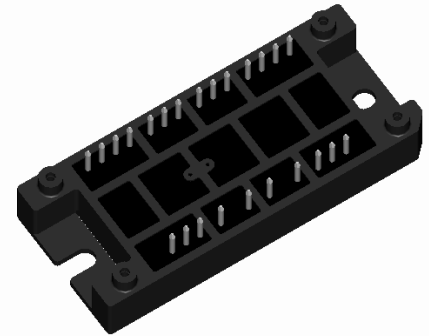
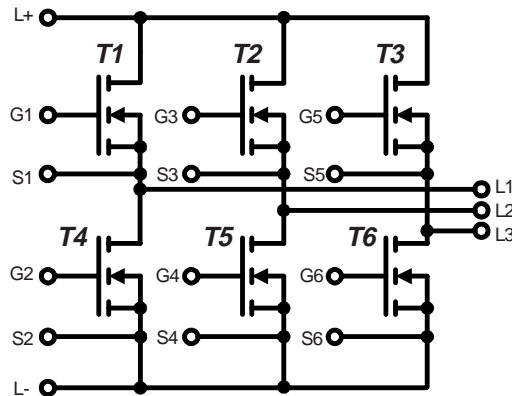


Three phase full bridge with Trench MOSFETs

$V_{DSS} = 75\text{ V}$
 $R_{DSon} = 2.3\text{ m}\Omega$
 $I_{D25} = 340\text{ A}$

Preliminary data



MOSFETs T1 - T6

Symbol	Conditions	Maximum Ratings	
V_{DSS}	$T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$	75	V
V_{GS}		± 20	V
I_{D25}	$T_C = 25^{\circ}\text{C}$	340	A
I_{D80}	$T_C = 80^{\circ}\text{C}$	250	A
I_{D25}	$T_C = 25^{\circ}\text{C}$ (diode)	340	A
I_{D80}	$T_C = 80^{\circ}\text{C}$ (diode)	250	A

Applications

- AC drives
- in automobiles
 - electric power steering
 - starter generator
 - etc...
 - in industrial vehicles
 - propulsion drives
 - fork lift drives
 - in battery supplied equipment

Symbol	Conditions	Characteristic Values ($T_{VJ} = 25^{\circ}\text{C}$, unless otherwise specified)		
		min.	typ.	max.
R_{DSon}	$V_{GS} = 10\text{ V}; I_D = I_{D80}$		2.3	3.3 m Ω
V_{GSth}	$V_{DS} = 20\text{ V}; I_D = 2\text{ mA}$	2		4 V
I_{DSS}	$V_{DS} = 75\text{ V}; V_{GS} = 0\text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		0.25	0.02 mA mA
I_{GSS}	$V_{GS} = \pm 20\text{ V}; V_{DS} = 0\text{ V}$			0.2 μA
Q_g Q_{gs} Q_{gd}	$V_{GS} = 10\text{ V}; V_{DS} = 0.5 \cdot V_{DSS}; I_D = 175\text{ A}$		450	nC
			60	nC
			170	nC
$t_{d(on)}$ t_r $t_{d(off)}$ t_f	$V_{GS} = 10\text{ V}; V_{DS} = 0.5 \cdot V_{DSS};$ $I_D = 175\text{ A}; R_G = 2.2\ \Omega$		60	ns
			170	ns
			320	ns
			200	ns
V_F	(diode) $I_F = 175\text{ A}; V_{GS} = 0\text{ V}$		1.1	1.6 V
t_{rr}	(diode) $I_F = 40\text{ A}; -di/dt = 200\text{ A}/\mu\text{s}; V_{DS} = 30\text{ V}$		90	ns
R_{thJC} R_{thJH}	with heat transfer paste		0.51	0.26 K/W K/W

Ratings and characteristic values are per individual MOSFET

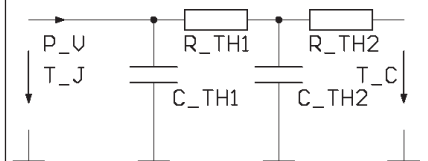
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Module

Symbol	Conditions	Maximum Ratings	
T_{VJ}		-40...+175	°C
T_{stg}		-40...+125	°C
V_{ISOL}	$I_{ISOL} \leq 1 \text{ mA}; 50/60 \text{ Hz}; t = 1 \text{ min}$	500	V~
M_d	Mounting torque (M5)	2 - 2.5	Nm

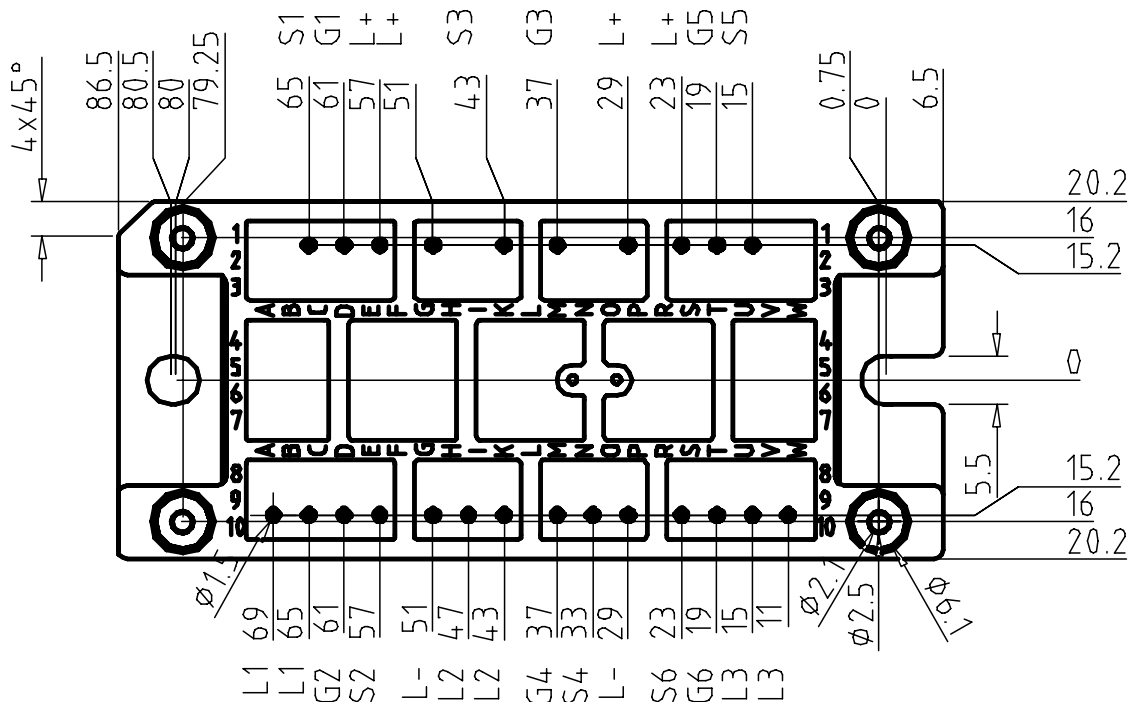
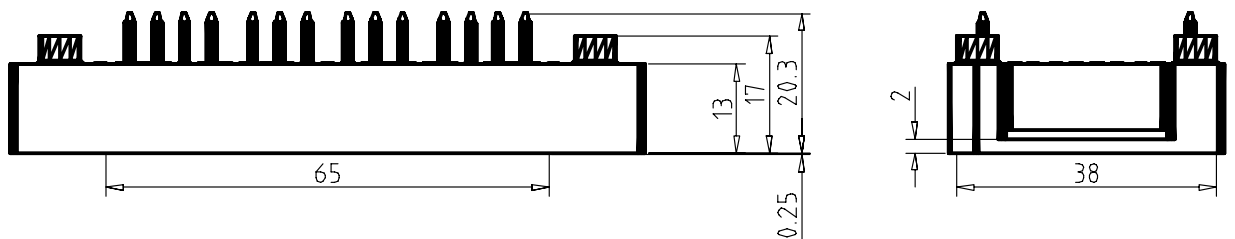
Symbol	Conditions	Characteristic Values ($T_{VJ} = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
Weight	typ.		80	g

Equivalent Circuits for Simulation
Thermal Response


junction - case (typ.)

 $C_{th1} = 0.13 \text{ J/K}; R_{th1} = 0.08 \text{ K/W}$
 $C_{th2} = 0.22 \text{ J/K}; R_{th2} = 0.18 \text{ K/W}$

Dimensions in mm (1 mm = 0.0394")



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